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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,005	02/25/2004	Shigeru Fujita	SON-2612/DIV	9742
23353	7590	10/26/2004	EXAMINER	
RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			LE, THAO X	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/785,005	Applicant(s) FUJITA, SHIGERU	
	Examiner Thao X Le	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>29 Sep 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 6-12 and 17-22 are cancelled in the amendment dated 02/25/04.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 3-4 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6251761 to Rodder et al.

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Regarding claim 1, Rodder discloses a semiconductor device comprising: a semiconductor substrate 102, fig. 1, a high dielectric-constant film 108, column 2 line 59, on a semiconductor substrate 102, fig. 1, and forming a nitride layer 107, column 2 line 67, on the top surface of the high-dielectric-constant film 108.

Regarding claims 3-4, Rodder discloses the semiconductor device wherein the nitride layer 107 is formed by introducing nitrogen in to the top surface portion of the high-dielectric-constant film 108, column 4 lines 42-45 and column 3 lines 25-45, wherein the substrate 102 is a semiconductor material, column 2 line 45, including silicon, see abstract.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2,5, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6251761 to Rodder et al. in view of US 6436848 to Ramkumar.

Regarding claims 2-5, Rodder discloses the semiconductor device further a polysilicon layer 110 on the nitride layer 107, fig. 1.

But Rodder does not expressly disclose the boron doping p-type impurity polysilicon layer.

However, Ramkumar discloses a semiconductor device wherein polysilicon gate layer is being doped with boron to form P-type gate, column 1

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line 27-30. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the p-type polysilicon teaching of Ramkumar with Rodder's layer 110, because it would have created a p-type gate MOSFETS.

Regarding claims 13, 15, Rodder discloses a semiconductor device comprising: a gate insulating film 108 on a semiconductor substrate 102, a gate electrode 110 formed on the gate insulating film 108, wherein the gate insulating film 108 includes a high-dielectric-constant film 108 on the semiconductor substrate 102, and a step of forming a nitride layer 107 on the top surface of the high-dielectric-constant film 108, fig. 1.

But Rodder does not expressly disclose a gate electrode including at least a p-type impurity layer.

However, Ramkumar discloses a semiconductor device wherein polysilicon gate layer is being doped with boron to form P-type gate, column 1 line 27-30. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the p-type polysilicon teaching of Ramkumar with Rodder's layer 110, because it would have created a p-type gate MOSFETS.

Regarding to claims 14-15, Rodder discloses the semiconductor wherein the nitride layer 107 is formed by introducing nitrogen into a top surface portion of the high-dielectric-constant film 108, column 4 lines 42-45 and column 3 lines 25-45, wherein the substrate 102 is a semiconductor material, column 2 line 45, including silicon, see abstract.

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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is (571) 272-1708.

The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thao X. Le
14 Oct. 2004

LONG PHAM
PRIMARY EXAMINER